The Boundaries of Astronomy.

The star sweeps along through our system with stupendous velocity. Now there can be no doubt that if the star were permanently to retain this velocity it would in the course of time travel right across our system and after leaving our system would retreat into the depths of infinite space. Is there any power adequate to recall this star voyage to infinity? We know of none, unless it be the attraction of the stars or other bodies of our sidereal system. It, therefore, becomes a matter of calculation to determine whether the attraction of all the material bodies of our sidereal system could be adequate, even with universal gravitation, to recall a body which seems bent on leaving that system with a velocity of 200 miles per second. This interesting problem has been discussed by Professor Newcomb, whose calculations we shall here follow. In the first place we require to make some estimate of the dimensions of the sidereal system, in order to see whether it seems likely that this star can ever be recalled. The number of stars may be taken at 100,000,000, which is probably double as many as the number we can see with our best telescopes. The masses of the stars may be taken as on the average five times as great as the mass of the sun. The distribution of the stars is suggested by the constitution of the milky way. One hundred million stars are presumed to be disposed in a flat circular layer of such dimension that a ray of light would require 30,000 years to traverse one diameter. Assuming the ordinary law of gravitation, it is now easy to compute the efficiency of such an arrangement in attempting to recall a moving star.

The whole question turns on a certain critical velocity of twenty-five miles a second. If a star darts through the system we have just been considering with a velocity less than twenty-five miles a second, then, after that star had moved for a certain distance, the attractive power of the system would gradually bend the path of the star round, and force the star to return to the system. If, therefore, the velocities of the stars were under no circumstances more than twenty-five miles a second, then, supposing the system to have the character we have described, that system might be always the same. The stars might be in incessant motion, but they must always remain in the vicinity of our present system, and our whole sidereal system might be an isolated object in space, just as our solar system is an isolated object in the extent of the sidereal system. We have, however, seen that for one star at all events the velocity is no less than two hundred miles a second. If this star dash through the system, then the attractions of all the bodies in the system will unite in one grand effort to recall the wanderer. This attraction must to some extent be acknowledged, the speed of the wanderer must gradually diminish as he recedes into space; but that speed will never be lessened sufficiently to bring the star back again. As the star retreats further and further the potency of the attraction will decrease, but, owing to the velocity of the star being over twenty-five miles a second, the attraction can never overcome the velocity; so that the star seems destined to escape. This calculation is, of course, founded on our assumption as to the total mass of the stars and other bodies which form our sidereal system. That estimate is founded on a general, indeed, a very liberal, interpretation of the evidence which our telescopes have afforded. But it may still fall short of the truth. There may be more than a hundred million stars in our system; their average weight may be more than our sun. But unless the assumption is enormously short of the truth, our inference can not be challenged.—*Prof. Ball, in the Contemporary Review.*

—"Lives of witty men remind us 'tis not the pun or silly chaff that leaves quotation marks behind us, and causes all the world to laugh.—*N. Y. News.* Lives of small-souled men remind us that they're prone to criticism, but that habit does not blind us to their mighty egotism.—*Our Continent.*